Natural Heritage & Endangered Species Program

Commonwealth of Massachusetts
Division of Fisheries & Wildlife
Route 135
Westborough, MA 01581
(508) 792-7270

MASSACHUSETTS THREATENED SPECIES

Piping Plover
(Charadrius melodus)

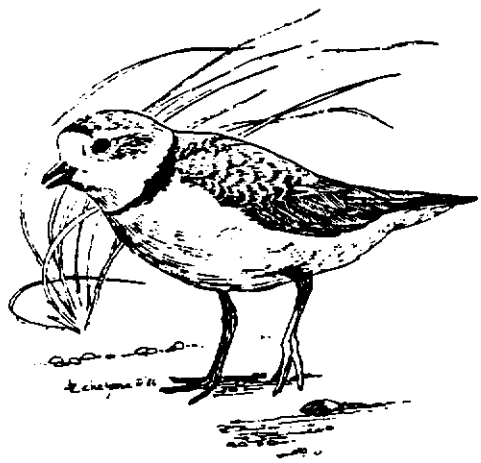


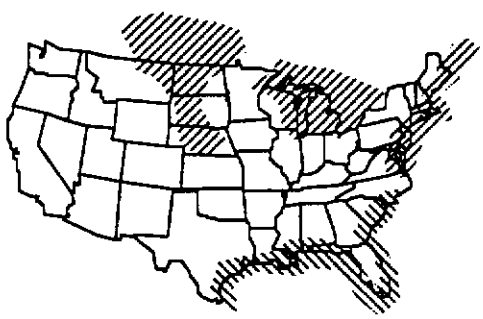
Illustration by J. Zickefoose, 1986

DESCRIPTION: The Piping Plover is a small, stocky shorebird with pale brownish gray or sandy-colored plumage on its backside, with a white breast, forehead, cheeks, and throat, a black streak on the forecrown extending from eye to eye, and a black breastband which may not always form a complete circle. Its coloration gives it excellent camouflage in sandy areas. The average Piping Plover is 15 to 17 cm (6 to 7 in.) long, with a wingspan of 35 to 40 cm (14 to 16 in.). The tail is white at the base and tip, but dark in the middle. It has yellow-orange legs and its short bill is yellow-orange with a black tip in the summer, but turns completely black during the winter. In general, females have darker bills and lighter plumage than males. The Piping Plover runs in a pattern of brief starts and stops; in flight, it displays a pair of prominent white wing stripes. Its call is a series of piping whistles.

SIMILAR SPECIES IN MASSACHUSETTS: The Piping Plover is similar to the Semipalmated Plover (Charadrius semipalmatus) in size, shape, and coloration; both also share the same general habitat. However, the Semipalmated Plover is a darker brown in color, and has much more black on its head than the Piping Plover. The Semipalmated Plover does not breed in Massachusetts but passes through in large numbers from late July to early September during its southward migration.

RANGE: During the summer, the Atlantic Coast population of Piping Plovers nests from the coast of Massachusetts north to Newfoundland, and south to Virginia and North Carolina. In winter they migrate farther south, from South Carolina to Florida, the Gulf of Mexico, and the West Indies. Other populations of Piping Plovers nest along rivers on the Northern Great Plains and along the shores of the Great Lakes, migrating to the Gulf of Mexico in the winter.

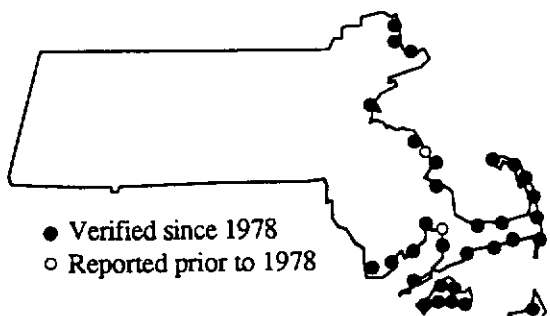
(continued overleaf)



Range of Piping Plover

Winter range

Summer (breeding) range



Massachusetts Distribution by Town

1990

HABITAT: Piping Plovers in Massachusetts require sandy coastal beaches which are relatively flat and free of vegetation. They prefer the dry, light-colored sand found along the outer coastal shores. Piping Plovers often build their nests in a narrow area of land between the high tide line and the foot of the coastal dunes; they also nest in Least Tern colonies. Water is a critical necessity for Piping Plover habitat, since the birds feed exclusively on organisms which live along the shoreline.

LIFE CYCLE / BEHAVIOR: As soon as Piping Plovers return to their breeding grounds in Massachusetts in late March or April, the males begin to set up territories and attract mates. Territorial rivalry between males is very strong; adjacent male Piping Plovers mark off their territories by running side by side down to the waterline. Each bird takes turns, one running forward a few feet, then waiting for the other to do likewise. Nests are usually at least 200 feet apart; the nesting pair will confront any intruding Piping Plover which approaches the nest. Male Piping Plovers also defend feeding territories encompassing beach front adjacent to the nesting territory.

Courtship consists of a ritualized display by the male, who flies in ovals or figure-eights around a female, then displays on the ground by bowing his head, dropping his wings, and walking in circles around the female. The male also scrapes shallow depressions in the sand at potential nest sites. The female then chooses one of these nesting sites, usually in a flat, sandy area. The nest itself is a shallow depression which is often lined with shell fragments and small pebbles, which may aid in camouflaging the eggs. Female Piping Plovers typically lay four eggs per clutch, one egg every other day over a week's time. The eggs are sandy gray in color with dark brown or black spots, and all hatch within 4 to 8 hours of each other. Both parents take part in incubating the eggs until they hatch 3 to 4 weeks later.

The young chicks leave the nest within 2 to 3 hours after hatching and may wander several hundred meters before they become capable of flight. When threatened by predators or human intruders, the young run or lie motionless on the sand while their parents often pretend to have broken wings in an effort to attract the intruder's attention away from the chicks. Young Piping Plovers are brooded by their parents for 3 to 4 weeks and finally fledge 4 to 5 weeks after hatching, at which time they leave the nesting area.

Piping Plovers feed on marine worms, molluscs, insects, and crustaceans. They forage along the waterline, on mudflats at low tide, and in wrack along the beach. Foraging behavior consists of running a short distance, then staring at the ground with the head tilted to one side, often standing on one foot while vibrating the other foot on the ground, and finally pecking at the food item it has detected in the sand.

Piping Plovers begin to migrate southward between late July and early September, although occasional stragglers remain behind until late October. Adult birds often return to the same nesting area every spring, although they frequently change mates from year to year. Young birds may nest anywhere from a few hundred feet to many miles from where they were hatched.

POPULATION STATUS IN MASSACHUSETTS: The Atlantic Coast population of Piping Plovers is listed as Threatened at both the state and federal levels. In 1990, 139 breeding pairs from 58 sites in Massachusetts were documented. Massachusetts has the second largest population of Piping Plovers along the Atlantic Coast.

Habitat loss due to development of coastal areas and waterways has caused a catastrophic decline in the Piping Plover population over the last 50 years. Predation on eggs and young has also increased due to the growing number of foxes, skunks, raccoons, and other predators that thrive in suburban areas. Due to their cryptic coloration, the nearly invisible eggs and chicks are often unintentionally crushed by off-road vehicles (ORV's) and pedestrians on the beach. Continual disturbance of nest sites from recreational use of the state's beaches may lead some breeding pairs to abandon their nests. Severe storms can wash away and destroy eggs.

In recent years, the placement of wire enclosures surrounding Piping Plover nest sites has drastically reduced predation at many nest sites. Protection of essential habitat from development and restriction of ORV use in these areas is crucial in order to maintain a healthy population of Piping Plovers in Massachusetts.

Piping Plover

(Charadrius melodus)

Piping plovers have been described as everything from wind-up toys to tennis balls rolling along the sandy beaches of the coast. Sometimes they blend into the beach so thoroughly that they are almost impossible to see. Like other plovers, they run in short starts and stops.

The piping plover's name comes from its call-notes, plaintive bell-like whistles that are often heard before the birds are seen. When sitting still, their buff-colored plumage, black necks, and black forehead bands make them virtually invisible in the sand. From a distance, the scrapes in the sand that are their nests and their buff-colored eggs speckled with tiny black dots are indistinguishable from the beach. But although these adaptations protect plovers from natural predators, they do not help protect them from human activities, which have become the greatest threat to their survival.

Life History

The piping plover breeds on coastal beaches from Newfoundland and the Gulf of Maine to North Carolina. They winter primarily on the Atlantic Coast from the Carolinas to Florida, but also as far south as the Yucatan Peninsula, the Bahamas, and the West Indies. Between March and April, piping plovers make the long flight from these wintering grounds to the beaches of the mid- and north Atlantic. They establish territories on these beaches, mate, and scratch out shallow nests in the unvegetated sand above the high tide line. Nests are no more than shallow depressions lined with shell fragments or pebbles.

Adults tend to return to beaches where they previously nested, arriving at breeding grounds on Gulf of Maine beaches in early April. Mating involves courtship displays that include mock nest scraping, pebble-tossing, tilts, and low, shallow flights. Incubation responsibilities are shared by both the male and the female. Their four eggs hatch after approximately 28 days, and the hatchlings soon follow their parents to forage for marine worms, crustaceans, and insects on the beach.

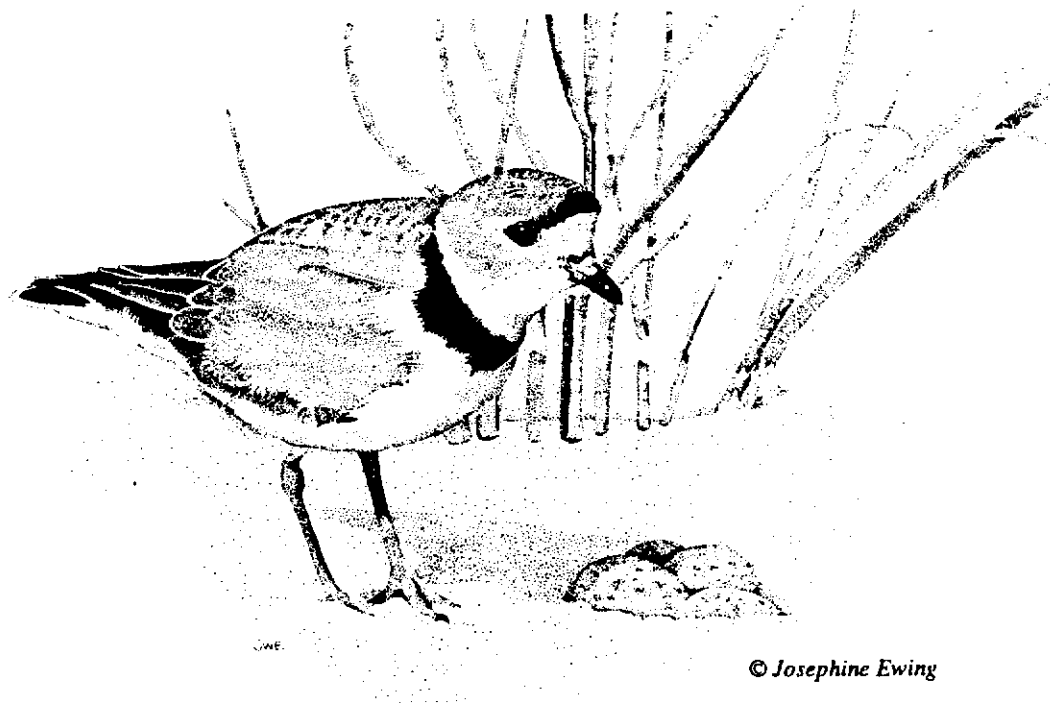
Once the hatchlings emerge, it generally takes about 30 to 35 days for them to learn to fly. If a predator or intruder approaches, the young become motionless while their parents try to divert the intruder's attention to themselves, often by pretending to hobble around with a broken wing.

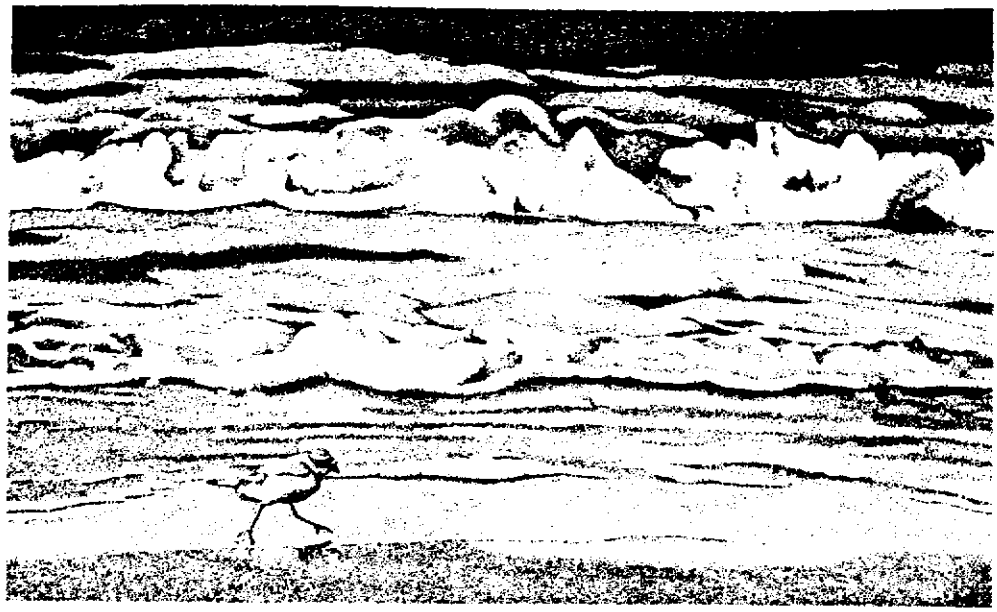
Distribution, Abundance, and Threats

Historically, piping plovers were abundant in sandy coastal habitat throughout their range. But by the late 1800s, commercial hunting for feathers—primarily to decorate hats—nearly wiped out the species. Federal protection by the Migratory Bird Treaty Act of 1918 allowed piping plovers to recover to record numbers in the 1940s, but recent habitat loss and disturbance on beaches has caused a new and serious decline in their population. Most recent surveys count the entire Atlantic population at less than 1,000 pairs. Two other breeding populations of piping plovers exist in the United States; one on the Great Plains and the other in the Great Lakes region.

Human disturbance currently is the greatest threat to the piping plover's survival. People may intentionally or accidentally destroy nests and eggs by walking or driving over them on the beach. Hatchlings may often seek shelter in tire tracks left on beaches. This further camouflages them and makes them especially vulnerable to beach vehicles. Pets can harass adults off their nests long enough to cause overheating or chilling of eggs or even complete abandonment of chicks, exposing them to natural predators such as crows, gulls, red foxes, skunks, or rats.

Both human activities and natural changes in the piping plover's habitat have had serious impacts on the future of this species in the Gulf of Maine. Recently, beach erosion between breeding seasons





© *Josephine Ewing*

eliminated nesting sites along the Morse River in Phippsburg, Maine. In the 1960s, construction of a housing development in Scarborough, Maine, completely eradicated a prime nesting area for piping plovers and least terns. Summer storms with high winds or tides can bury or wash out nests. Vegetation can encroach and crowd out plovers, and even dune restoration programs must remain sensitive to the dune characteristics plovers need for their nests.

Piping Plover Facts

- Plovers have been recorded making as many as 5 nesting attempts in a single season, laying a total of 18 eggs.
- If left unattended long enough on sunny days when beachgoers often share plover habitat, plover eggs can actually cook on the hot sand.
- Piping plovers are one of several species of shorebirds nesting in Maine. Others are killdeer, willets, spotted sandpipers, snipe, and woodcock.

Protecting the Piping Plover

The piping plover came under the protection of the Endangered Species Act in January of 1986. It is listed as a threatened species, which means that without protection the remaining population would continue to decline. The Endangered Species Act prohibits taking, harassing, or harming piping plovers and assists in efforts to protect their habitat.

Since listing the piping plover, the U.S. Fish and Wildlife Service has formed recovery teams for the inland and Atlantic coast populations. These U.S. and Canadian research teams establish conservation priorities and procedures for restoring populations. Several projects are underway in the Gulf of Maine to protect the plover's breeding and wintering range. Nest exclosures (wire mesh fences around nest sites to exclude predators) and extensive use of informational signs to inform the public about sensitive areas are helping to protect plover habitat. Negotiations for purchase, easements, and consent agreements are underway with landowners. In some cases, predator control and habitat creation have kept nesting areas intact.

U.S. Fish and Wildlife Service

Protection of migratory birds, seabirds, anadromous fish, and endangered species in the Gulf of Maine is the responsibility of the U.S. Fish and Wildlife Service. The Service established the Gulf of Maine Project in Portland, Maine, to protect and restore the watershed's ecosystems and habitats by providing a bridge between all Service programs in the Gulf of Maine and by building partnerships among state and federal agencies, local organizations, and private citizens working to improve coastal habitats. The Gulf of Maine Project participates in EPA's National Estuary Programs in Massachusetts Bays and Casco Bay, Maine, providing information on fish and wildlife habitat needs in order to promote thorough consideration of living resources in the management planning process. The Project has brought together state, federal, and non-governmental representatives from each jurisdiction in the watershed to conduct a priority habitat identification process as part of the international initiative of the Gulf of Maine Council on the Marine Environment, and has developed a GIS (Geographic Information System) that includes data-sharing and coordination with state fish and wildlife agencies. The Project has established partnerships with local conservation groups and land trusts, and is conducting wetland trends analyses in the watershed to target specific areas for local action. For more information, contact the Gulf of Maine Project in Portland, Maine, at (207) 828–1080.

September 1993

Production of this publication was funded by the U.S. Environmental Protection Agency. EPA